

Appendix J. Stream and River Temperature Data

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Stream and River Temperature Data

This appendix contains a summary of the stream and river temperature data of the South Fork Clearwater River (SF CWR) Subbasin. The data summaries are shown in table and graphical formats below.

Summary data for 142 temperature loggers are shown in Table J-1. These are data collected by various agencies and are from several years. Some water bodies have several monitoring stations, others have only one, and many have none.

Each of the temperature logger data sets is evaluated in a computer program developed by the Idaho Department of Environmental Quality (DEQ) to compare the data to the state water quality standards (WQS) and the federal bull trout standard. Input to the program requires the temperature data organized by date and time, elevation, and location of the temperature logger location. The program also requires the dates of the spawning periods for the various salmonids using a particular water body. Table J-1 shows the salmonids determined to be present in each of the water bodies. The spawning period for each of the species was determined by the Fisheries Technical Advisory Group (Fish TAG) and is shown in Appendix D, Attachment D-1. Results of the stream temperature evaluation program for selected sites on the 303(d) listed water bodies Little Elk Creek, Big Elk Creek, Threemile Creek, Butcher Creek, and the main stem SF CWR at Stites are shown in Figures J-1 through J-6, and are discussed below.

For each of the temperature recording locations and for each year of data, a plot is made of the temperature data, as can be seen below for the selected streams. Different statistics can be shown on the plot. For example, Little Elk Creek at the mouth shows the daily maximums, daily averages, and the daily diurnal difference, along with lines showing the salmonid spawning daily average WQS and the cold water biota daily average WQS; Little Elk Creek at the Nez Perce National Forest boundary and Big Elk Creek show the same data except the diurnal differences are not shown; and the other three figures show the daily maximums, averages, and minimums for their water bodies, along with the WQS lines.

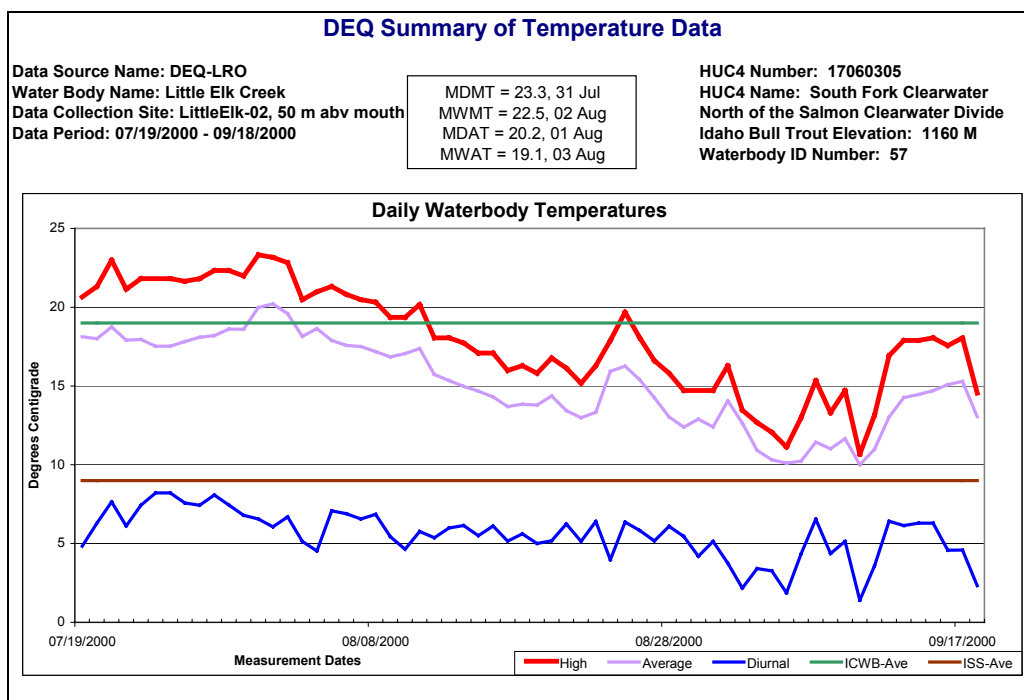
(In this appendix, we continue to use the antiquated terminology “Cold Water Biota” as well as the currently approved terminology “Cold Water Aquatic Life” primarily because the computerized model print out still produces that results as “Cold Water Biota”. The two sets of terms are equivalent.)

In addition to the plots, different data sets are produced summarizing the data in relation to the different WQS. For bull trout, for example, the data set shows the WQS criteria, the number of days of exceedance, and the percentage exceedance. These results must be evaluated in relation to both the dates when the data were collected and the specified spawning periods. Also, in the case of Idaho salmonid spawning standards evaluation, the program evaluates separately for spring and fall spawners since different species

spawn at different times. Representative data sets from the 303(d) listed water bodies are shown on the following pages.

For all of the temperature logger sites and dates, the most important data for exceedance analyses are presented in Table J-1.

The tables below are auto-generated by the DEQ temperature assessment program and offer little opportunity for manipulation. For example, they all show assessments for bull trout water quality standards, even though some water bodies do not support bull trout and are not federally protected for bull trout. For that reason, a short discussion of the salient points is presented after each set of tables and figures. The purpose of presenting all the somewhat confusing data is to show the reader examples of typical temperature profiles in the SF CWR Subbasin.



STATISTICS	
Instantaneous Maximum	23.3 °C
Instantaneous Minimum	8.6 °C
Overall Mean	0.0 °C
Mean Daily Maximum	18.0 °C
Mean Daily Average	15.2 °C
Mean Daily Minimum	12.4 °C
Maximum Daily Average	20.2 °C
Maximum 7-Day Maximum	22.5 °C
Maximum 7-Day Average	19.1 °C
Minimum 7-Day Minimum	9.0 °C

EPA Bull Trout Criteria Exceedance Summary			
Criteria	Exceedance Counts		
	Nmbr	Prnt	
10 °C 7-Day Avg of Daily Max	56	100%	
Nmbr of 7-Day Avg's w/in Dates	56	01-Jun	30-Sep

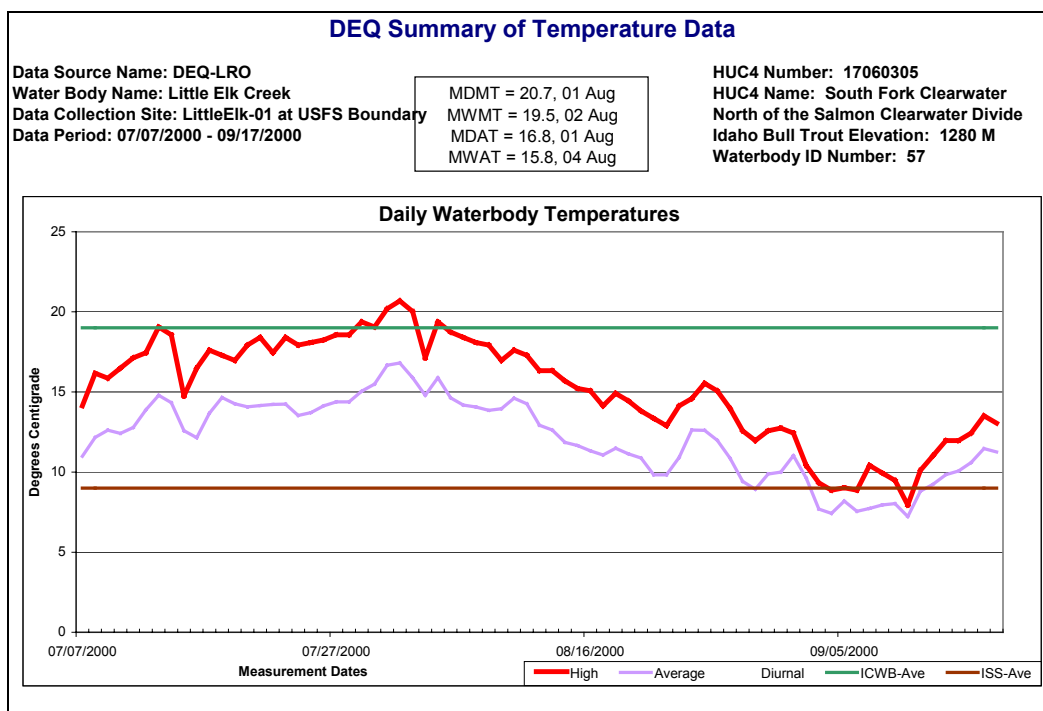
Idaho Cold Water Biota Criteria Exceedance Summary			
Criteria	Exceedance Counts		
	Nmbr	Prnt	
22 °C Instantaneous	6	10%	
19 °C Average	3	5%	
Days Evaluated & Date Range	62	06/22/2000	09/21/2000

Idaho Salmonid Spawning Criteria Exceedance Summary			
Criteria	Exceedance Counts		
	Nmbr	Prnt	
13 °C Instantaneous Spring	28	100%	
9 °C Average Spring	28	100%	
Spring Days Eval'd w/in Dates	28	01-Jun	15-Aug
13 °C Instantaneous Fall	29	85%	
9 °C Average Fall	34	100%	
Fall Days Eval'd w/in Dates	34	16-Aug	30-Sep
13 °C Instantaneous Total *	57	92%	
9 °C Average Total *	62	100%	
Tot Days Eval'd w/in Both Dates *	62		

* If spring & fall dates overlap double counting may occur.

Figure J-1. Temperature Data for Little Elk Creek, 50 meters above the Mouth

Comparing the data from Little Elk Creek at the mouth to those for Little Elk Creek at the USFS boundary (next page) shows the magnitude of the temperature increase across the unshaded meadows that the creek travels through between these two points. Otherwise the patterns are relatively the same. This stream is evaluated for salmonid spawning throughout the summer because of the presence of cutthroat trout and spring chinook salmon and because of required protection for bull trout.



STATISTICS	
Instantaneous Maximum	20.7 °C
Instantaneous Minimum	5.5 °C
Overall Mean	0.0 °C
Mean Daily Maximum	15.2 °C
Mean Daily Average	12.1 °C
Mean Daily Minimum	9.3 °C
Maximum Daily Average	16.8 °C
Maximum 7-Day Maximum	19.5 °C
Maximum 7-Day Average	15.8 °C
Minimum 7-Day Minimum	6.2 °C

EPA Bull Trout Criteria Exceedance Summary			
Criteria	Exceedance Counts		
	Nmbr	Prcnt	
10 °C 7-Day Avg of Daily Max	61	91%	
Nmbr of 7-Day Avg's w/in Dates	67	01-Jun	30-Sep

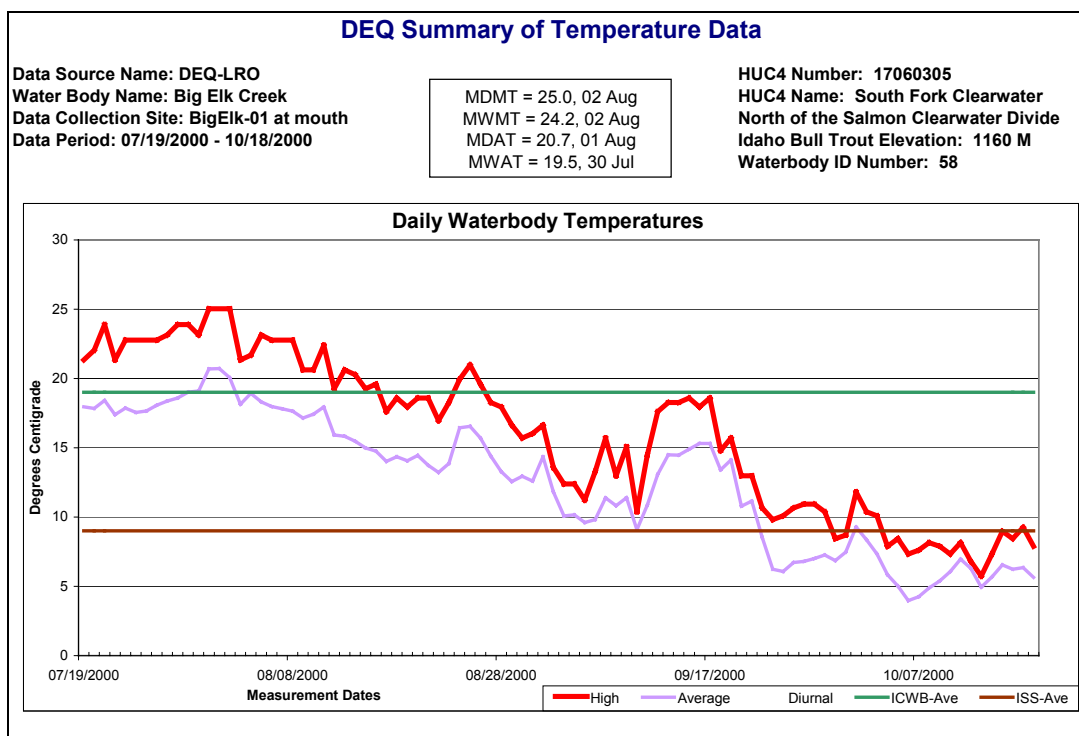
Criteria Exceedance Summary			
Criteria	Exceedance Counts		
	Nmbr	Prcnt	
22 °C Instantaneous	0	0%	
19 °C Average	0	0%	
Days Evaluated & Date Range	73	06/22/2000	09/21/2000

Idaho Salmonid Spawning Criteria Exceedance Summary			
Criteria	Exceedance Counts		
	Nmbr	Prcnt	
13 °C Instantaneous Spring	40	100%	
9 °C Average Spring	40	100%	
Spring Days Eval'd w/in Dates	40	01-Jun	15-Aug
13 °C Instantaneous Fall	13	39%	
9 °C Average Fall	23	70%	
Fall Days Eval'd w/in Dates	33	16-Aug	30-Sep
13 °C Instantaneous Total *	53	73%	
9 °C Average Total *	63	86%	
Tot Days Eval'd w/in Both Dates *	73		

* If spring & fall dates overlap double counting may occur.

Figure J-2. Temperature Data for Little Elk Creek at the USFS Boundary

Even though the water temperature at the USFS boundary was significantly cooler than at the mouth, water temperatures still exceeded the salmonid spawning WQS during most of the monitoring period.



STATISTICS	
Instantaneous Maximum	25.0 °C
Instantaneous Minimum	0.3 °C
Overall Mean	0.0 °C
Mean Daily Maximum	16.0 °C
Mean Daily Average	12.6 °C
Mean Daily Minimum	9.3 °C
Maximum Daily Average	20.7 °C
Maximum 7-Day Maximum	24.2 °C
Maximum 7-Day Average	19.5 °C
Minimum 7-Day Minimum	2.2 °C

EPA Bull Trout Criteria Exceedance Summary			
Criteria	Exceedance Counts		
	Nmbr	Prnt	
10 °C 7-Day Avg of Daily Max	68	100%	
Nmbr of 7-Day Avg's w/in Dates	68	01-Jun	30-Sep

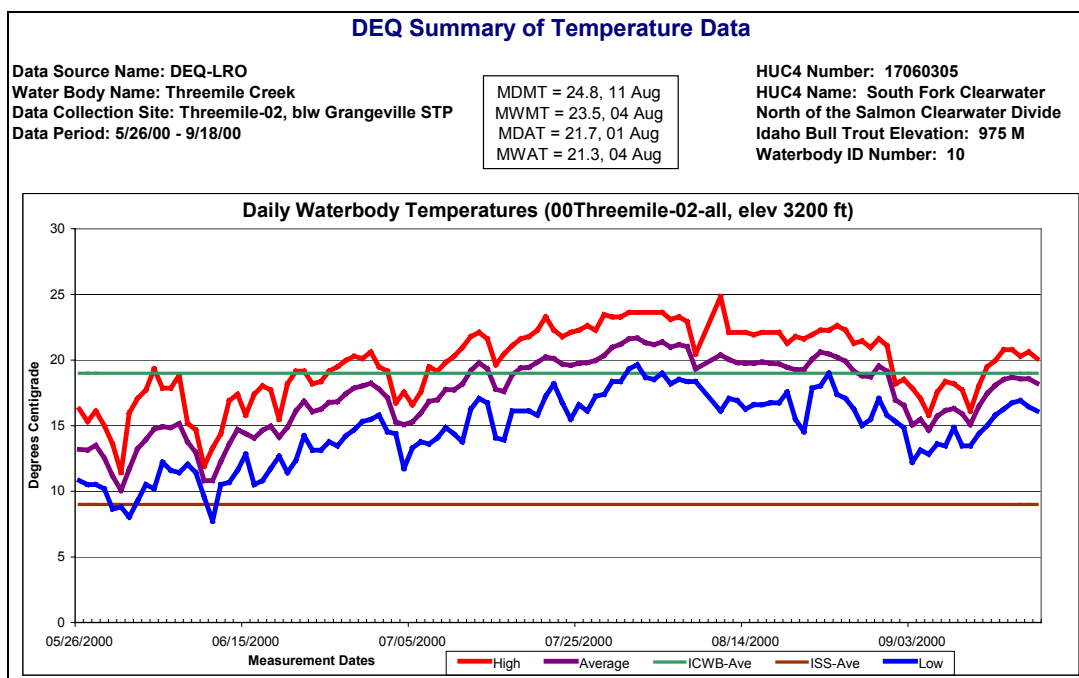
Idaho Cold Water Biota Criteria Exceedance Summary			
Criteria	Exceedance Counts		
	Nmbr	Prnt	
22 °C Instantaneous	18	20%	
19 °C Average	5	5%	
Days Evaluated & Date Range	65	06/22/2000	09/21/2000

Idaho Salmonid Spawning Criteria Exceedance Summary			
Criteria	Exceedance Counts		
	Nmbr	Prnt	
13 °C Instantaneous Spring	28	100%	
9 °C Average Spring	28	100%	
Spring Days Eval'd w/in Dates	28	01-Jun	15-Aug
13 °C Instantaneous Fall	30	65%	
9 °C Average Fall	37	80%	
Fall Days Eval'd w/in Dates	46	16-Aug	30-Sep
13 °C Instantaneous Total *	58	78%	
9 °C Average Total *	65	88%	
Tot Days Eval'd w/in Both Dates *	74		

* If spring & fall dates overlap double counting may occur.

Figure J-3. Temperature Data for Big Elk Creek at the Mouth

The pattern of temperatures of Big Elk Creek at the mouth looks fairly similar to Little Elk Creek at the mouth, except that Big Elk Creek is even warmer. Salmonid spawning criteria are exceeded well into September for a high percentage of the days of this record.



STATISTICS	
Instantaneous Maximum	31.4 °C
Instantaneous Minimum	7.7 °C
Overall Mean	0.0 °C
Mean Daily Maximum	19.8 °C
Mean Daily Average	17.5 °C
Mean Daily Minimum	14.7 °C
Maximum Daily Average	28.8 °C
Maximum 7-Day Maximum	24.2 °C
Maximum 7-Day Average	22.0 °C
Minimum 7-Day Minimum	9.4 °C

EPA Bull Trout Criteria Exceedance Summary			
Criteria	Exceedance Counts		
	Nmbr	Prcnt	
50 °C 7-Day Avg of Daily Max	0	0%	
Nmbr of 7-Day Avg's w/in Dates	109	01-Jun	30-Sep

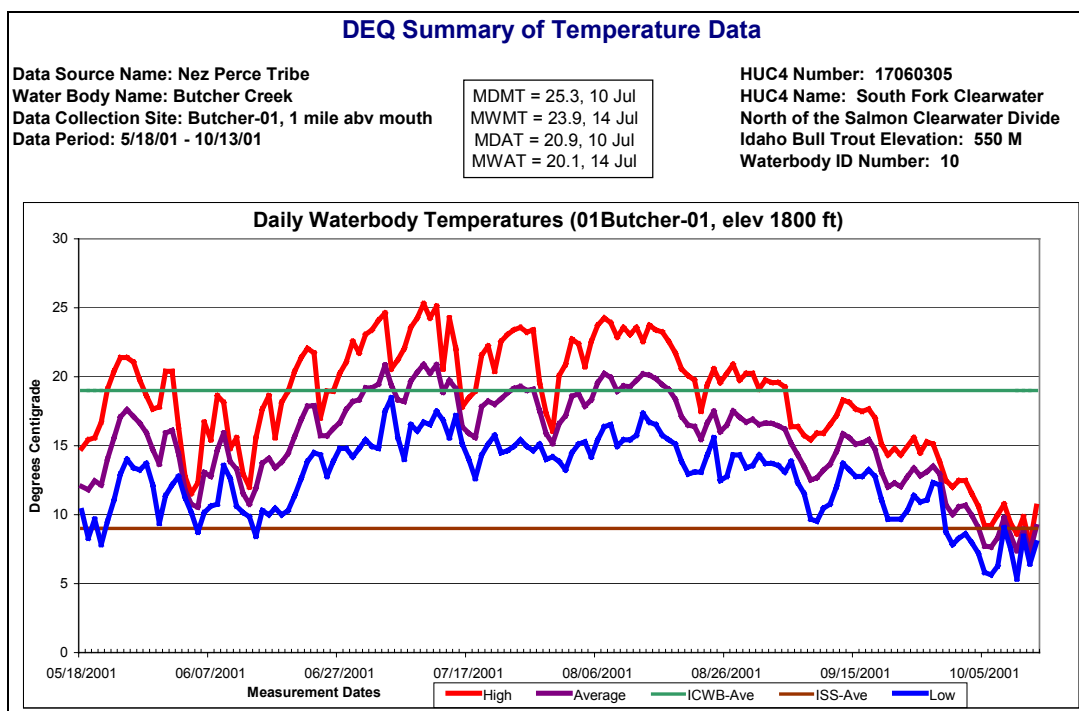
Idaho Cold Water Biota Criteria Exceedance Summary			
Criteria	Exceedance Counts		
	Nmbr	Prcnt	
22 °C Instantaneous	31	27%	
19 °C Average	45	39%	
Days Evaluated & Date Range	88	06/22/2000	09/21/2000

Idaho Salmonid Spawning Criteria Exceedance Summary			
Criteria	Exceedance Counts		
	Nmbr	Prcnt	
13 °C Instantaneous Spring	6	86%	
9 °C Average Spring	7	100%	
Spring Days Eval'd w/in Dates	7	01-Mar	01-Jun
13 °C Instantaneous Fall	0	0%	
9 °C Average Fall	0	0%	
Fall Days Eval'd w/in Dates	0	16-Dec	30-Dec
13 °C Instantaneous Total *	6	86%	
9 °C Average Total *	7	100%	
Tot Days Eval'd w/in Both Dates *	7		

* If spring & fall dates overlap double counting may occur.

Figure J-4. Temperature Data for Threemile Creek Below the Wastewater Treatment Plant

Threemile Creek has not been designated for bull trout so is not compared to this standard. The number of exceedances of the salmonid spawning criteria are small, but they cover 100% of the record (May 26 through June 1), because the spawning and incubation period for A-run steelhead ends on June 1. The graph indicates that stream temperatures are well elevated by the beginning of this record. Cold water biota standards exceedance numbers are probably the best indicators of the true level of exceedance at this site, although it should be kept in mind that this site is designated for salmonid spawning.



STATISTICS	
Instantaneous Maximum	25.3 °C
Instantaneous Minimum	5.3 °C
Overall Mean	0.0 °C
Mean Daily Maximum	18.5 °C
Mean Daily Average	15.5 °C
Mean Daily Minimum	12.7 °C
Maximum Daily Average	20.9 °C
Maximum 7-Day Maximum	23.9 °C
Maximum 7-Day Average	20.1 °C
Minimum 7-Day Minimum	6.7 °C

EPA Bull Trout Criteria Exceedance Summary			
Criteria	Exceedance Counts		
	Nmbr	Prcnt	
50 °C 7-Day Avg of Daily Max	0	0%	
Nmbr of 7-Day Avg's w/in Dates	122	01-Jun	30-Sep

Idaho Cold Water Biota Criteria Exceedance Summary			
Criteria	Exceedance Counts		
	Nmbr	Prcnt	
22 °C Instantaneous	36	24%	
19 °C Average	27	18%	
Days Evaluated & Date Range	92	06/22/2001	09/21/2001

Idaho Salmonid Spawning Criteria Exceedance Summary			
Criteria	Exceedance Counts		
	Nmbr	Prcnt	
13 °C Instantaneous Spring	15	100%	
9 °C Average Spring	15	100%	
Spring Days Eval'd w/in Dates	15	01-Mar	01-Jun
13 °C Instantaneous Fall	0	0%	
9 °C Average Fall	0	0%	
Fall Days Eval'd w/in Dates	0	16-Dec	30-Dec
13 °C Instantaneous Total *	15	100%	
9 °C Average Total *	15	100%	
Tot Days Eval'd w/in Both Dates *	15		

* If spring & fall dates overlap double counting may occur.

Figure J-5. Temperature Data for Butcher Creek, 1 Mile Above the Mouth

Butcher Creek has not been designated as protected for bull trout so is not compared to this standard. The number of days of salmonid spawning criteria exceedances is small, but represents 100% of the record (May 18 through June 1), because the spawning and incubation period for A-run steelhead ends on June 1. Cold water biota standards exceedance numbers are probably better indicators of the true level of exceedance at this site, although it should be kept in mind that this site is to support salmonid spawning.

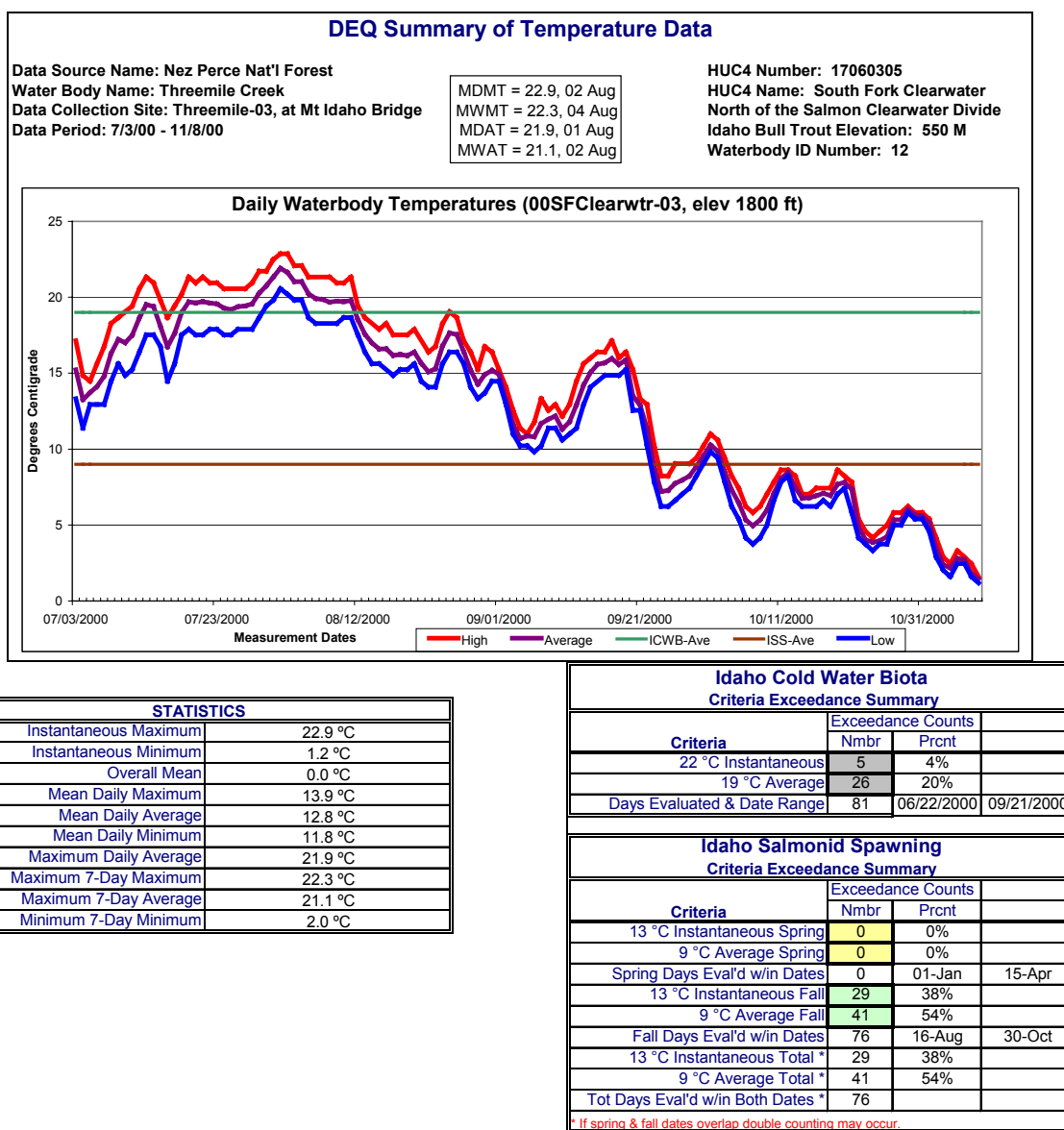


Figure J-6. Temperature Data for the Main Stem South Fork Clearwater River at the Mt. Idaho Bridge

The main stem SF CWR is not federally protected for bull trout spawning and rearing so the federal bull trout criteria do not apply. The Fish TAG identified spring chinook as the only salmonid possibly spawning in the lower main stem SF CWR during the temperature critical times of year (Appendix D). The main stem exceeds the cold water biota criteria for a significant period.

Table J-1. Summary water temperature data for stream and river monitoring locations in the SF CWR subbasin.

WB	Water Body Name	Location*	Dates Monitored	Salmonids Present**	Elev. (ft)	No. of Days Exceeding***:				
						Fed. Bull Trout	Spring SS	Fall SS	CWAL daily max.	CWAL daily ave.
1	South Fork Clearwater R.	SF Clearwater at Stites (USGS Gage)	7/9/99-10/30/99	Rain/Stl	1,200	NA	7	0	34	35
1	South Fork Clearwater R.	SF Clearwater at Stites (USGS Gage)	7/4/00-11/8/00	Rain/Stl	1,200	NA	12	0	49	45
1	South Fork Clearwater R.	SF Clearwater at Stites (USGS Gage)	7/11/01-10/27/01	Rain/Stl	1,200	NA	5	0	46	46
1	South Fork Clearwater R.	SF Clearwater at Lukes Gulch	6/15/00 - 10/22/00	Rain/Stl	1,400	NA	31	0	35	40
2	Cottonwood Cr.	Cottonwood Cr. Above Mouth	6/2/00-10/15/00	Rain/Stl	1,200	NA	44	0	91	83
10	Threemile Cr.	Threemile Cr. at Mouth	4/7/00-8/9/00	Rain/Stl	1,200	NA	97	0	25	27
10	Threemile Cr.	Threemile Cr. at Mouth	5/26/00-10/23/00	Rain/Stl	1,200	NA	51	0	35	47
10	Threemile Cr.	Threemile Cr. at Mouth	4/7/00-5/24/00	Rain/Stl	1,200	NA	44	0	1	1
10	Threemile Cr.	Threemile Cr. Below Grangeville WWTP	5/26/00-9/18/00	Rain/Stl	3,200	NA	7	0	31	45
10	Threemile Cr.	Threemile Cr. Below Grangeville WWTP	5/26/00-10/23/00	Rain/Stl	3,200	NA	7	0	29	43
10	Threemile Cr.	Threemile Cr. Below Grangeville WWTP	4/7/00-5/24/00	Rain/Stl	3,200	NA	32	0	1	1
10	Threemile Cr.	Threemile Cr. Below Grangeville WWTP	4/7/00-5/24/00	Rain/Stl	3,200	NA	31	0	1	1

						No. of Days Exceeding***:				
WB	Water Body Name	Location*	Dates Monitored	Salmonids Present**	Elev. (ft)	Fed. Bull Trout	Spring SS	Fall SS	CWAL daily max.	CWAL daily ave.
10	Threemile Cr.	Threemile Cr. Above Grangeville WWTP	5/26/00-8/7/00	Rain/Stl	3,200	NA	50	0	12	9
10	Threemile Cr.	Threemile Cr. Above Grangeville WWTP	8/12/00-9/28/00	Rain/Stl	3,200	NA	0	0	2	1
10	Threemile Cr.	Threemile Cr. Above Grangeville WWTP	4/7/00-5/24/00	Rain/Stl	3,200	NA	24	0	1	1
10	Threemile Cr.	Threemile Cr. at Spencer Ranch	5/26/00-10/6/00	Rain/Stl	3,000	NA	47	0	60	28
10	Threemile Cr.	Threemile Cr. at Spencer Ranch	4/7/00-5/24/00	Rain/Stl	3,000	NA	14	0	1	1
11	Butcher Cr.	Butcher Cr. 1 mi Above Mouth	5/18/01-10/13/01	Rain/Stl	1,800	NA	15	0	36	27
12	South Fork Clearwater R.	SF Clearwater at Mt. Idaho Bridge	7/7/98-9/14/98	Chinook, Rain/Stl	1,800	NA	9	0	0	10
12	South Fork Clearwater R.	SF Clearwater at Mt. Idaho Bridge	7/16/99-10/8/99	Chinook, Rain/Stl	1,800	NA	0	0	0	7
12	South Fork Clearwater R.	SF Clearwater at Mt. Idaho Bridge	7/3/00-11/8/00	Chinook, Rain/Stl	1,800	NA	0	41	5	26
12	South Fork Clearwater R.	SF Clearwater at Mt. Idaho Bridge	7/11/01-11/27/01	Chinook, Rain/Stl	1,800	NA	5	0	0	13
12	South Fork Clearwater R.	SF Clearwater Below Mill Cr.	7/16/99-10/7/99	Chinook, Rain/Stl	2,200	NA	0	0	0	0
12	South Fork Clearwater R.	SF Clearwater Below Mill Cr.	6/20/00-9/01/00	Chinook, Rain/Stl	2,200	NA	26	0	3	8

WB	Water Body Name	Location*	Dates Monitored	Salmonids Present**	Elev. (ft)	No. of Days Exceeding***:				
						Fed. Bull Trout	Spring SS	Fall SS	CWAL daily max.	CWAL daily ave.
12	South Fork Clearwater R.	SF Clearwater Below Mill Cr.	5/25/01-10/27/01	Chinook, Rain/Stl	2,200	NA	43	0	0	4
12	South Fork Clearwater R.	SF Clearwater at USFS Boundary	5/25/01-10/27/01	Chinook, Rain/Stl	1,800	NA	44	0	0	16
12	South Fork Clearwater R.	Castle Cr. at Mouth	7/4/01-10/27/01	Rain/Stl	2,200	NA	12	1	37	18
12	South Fork Clearwater R.	Earthquake Cr. at Mouth	7/6/01-10/27/01	Rain/Stl	2,200	NA	10	0	0	0
12	South Fork Clearwater R.	Green Cr. at Mouth	7/4/01-10/22/01	Rain/Stl	1,600	NA	43	0	0	0
12	South Fork Clearwater R.	Lightning Cr. at Mouth	7/4/01-10/8/01	Rain/Stl	1,600	NA	43	0	0	0
12	South Fork Clearwater R.	Schwartz Cr. at Mouth	7/11/01-10/27/01	Rain/Stl	1,800	76	5	0	0	0
12	South Fork Clearwater R.	Sears Cr. at Mouth	7/11/01 - 10/22/01	Rain/Stl	2,200	NA	5	0	0	0
13	Mill Cr.	Mill Cr. at Mouth	7/14/99 - 10/7/99	Bull, Chinook, Rain/Stl, Cut, Brook	2,200	71	33	40	0	0
13	Mill Cr.	Mill Cr. at Mouth	6/17/00 - 10/4/00	Bull, Chinook, Rain/Stl, Cut, Brook	2,200	95	60	36	3	1
13	Mill Cr.	Mill Cr. at Mouth	5/25/01 - 10/27/01	Bull, Chinook, Rain/Stl, Cut, Brook	2,200	122	68	45	0	0
14	Johns Cr.	Johns Cr. at Gage	8/8/99 - 10/20/99	Bull, Chinook, Rain/Stl, Cut	2,400	46	8	41	0	0

WB	Water Body Name	Location*	Dates Monitored	Salmonids Present**	Elev. (ft)	No. of Days Exceeding***:				
						Fed. Bull Trout	Spring SS	Fall SS	CWAL daily max.	CWAL daily ave.
14	Johns Cr.	Johns Cr. at Gage	7/12/00 - 10/31/00	Bull, Chinook, Rain/Stl, Cut	2,400	70	35	35	0	0
14	Johns Cr.	Johns Cr. at Gage	7/11/01 - 10/30/01	Bull, Chinook, Rain/Stl, Cut	2,400	76	36	45	0	0
22	South Fork Clearwater R.	SF Clearwater Below Twentymile Cr.	6/24/00 - 11/7/00	Chinook, Rain/Stl	3,000	NA	22	38	2	7
22	South Fork Clearwater R.	SF Clearwater Below Twentymile Cr.	7/12/01 - 10/9/01	Chinook, Rain/Stl	3,000	NA	4	46	1	3
22	South Fork Clearwater R.	SF Clearwater Below Peasley Cr.	7/16/99 - 10/6/99	Chinook, Rain/Stl	2,600	NA	0	41	0	0
22	South Fork Clearwater R.	SF Clearwater Below Peasley Cr.	6/20/00 - 9/1/00	Chinook, Rain/Stl	2,600	NA	26	17	1	7
22	South Fork Clearwater R.	SF Clearwater Below Peasley Cr.	6/19/01 - 10/27/01	Chinook, Rain/Stl	2,600	NA	27	46	0	0
22	South Fork Clearwater R.	SF Clearwater Above Droogs Cr.	6/24/00 - 11/7/00	Chinook, Rain/Stl	3,000	NA	22	38	5	7
22	South Fork Clearwater R.	SF Clearwater Above Droogs Cr.	7/12/01 - 10/9/01	Chinook, Rain/Stl	3,000	NA	4	46	0	2
24	Twentymile Cr.	Twentymile Cr. at Mouth	8/7/98 - 10/31/98	Bull, Rain/Stl, Cut	3,000	43	9	0	0	0
24	Twentymile Cr.	Twentymile Cr. 1 km Above Road 1875 Crossing	4/4/00 - 9/8/00	Bull, Rain/Stl, Cut	4,200	82	58	0	0	0
25	Tenmile Cr.	Tenmile Cr. at Mouth	7/25/00 - 9/29/00	Bull, Cut, Chinook, Rain/Stl	3,400	47	22	25	0	0

WB	Water Body Name	Location*	Dates Monitored	Salmonids Present**	Elev. (ft)	No. of Days Exceeding***:				
						Fed. Bull Trout	Spring SS	Fall SS	CWAL daily max.	CWAL daily ave.
30	South Fork Clearwater R.	SF Clearwater Above Moose Cr.	6/23/00 - 10/18/00	Chinook, Rain/Stl, Cut	3,600	NA	54	38	21	16
30	South Fork Clearwater R.	SF Clearwater Above Moose Cr.	7/12/01 - 10/9/01	Chinook, Rain/Stl, Cut	3,600	NA	35	46	11	8
30	South Fork Clearwater R.	SF Clearwater Above Leggett Cr.	6/23/00 - 11/2/00	Chinook, Rain/Stl, Cut	3,600	NA	54	38	14	12
30	South Fork Clearwater R.	SF Clearwater Above Leggett Cr.	7/12/01 - 10/9/01	Chinook, Rain/Stl, Cut	3,600	NA	35	46	5	6
30	South Fork Clearwater R.	SF Clearwater Above Tenmile Cr.	6/23/00 - 11/7/00	Chinook, Rain/Stl, Cut	3,400	NA	54	38	7	16
30	South Fork Clearwater R.	SF Clearwater Above Tenmile Cr.	7/12/01 - 10/9/01	Chinook, Rain/Stl, Cut	3,400	NA	35	46	2	6
31	Crooked R.	Crooked R. at Lower Satellite Intake	5/16/98 - 9/08/98	Bull, Chinook, Rain/Stl, Brook, Cut	3,800	93	61	24	3	0
31	Crooked R.	Crooked R. at Lower Satellite Intake	7/11/00 - 9/30/00	Bull, Chinook, Rain/Stl, Brook, Cut	3,800	55	5	20	0	0
31	Crooked R.	Crooked R. 5 km Above Mouth	6/01/00 - 8/22/00	Bull, Chinook, Rain/Stl, Brook, Cut	4,000	73	66	7	8	0
31	Crooked R.	Crooked R. 1 km Above Mouth	5/31/00 - 9/7/00	Bull, Chinook, Rain/Stl, Brook, Cut	3,800	94	71	23	13	6
31	Crooked R.	Crooked R. 1 km Above Mouth	4/2/00 - 5/30/00	Bull, Chinook, Rain/Stl, Brook, Cut	3,800	0	0	0	0	0
32	Crooked R.	Just Below EF and WF Confluence	7/29/99 - 10/15/99	Bull, Chinook, Rain/Stl, Cut	4,600	32	16	15	0	0

WB	Water Body Name	Location*	Dates Monitored	Salmonids Present**	Elev. (ft)	No. of Days Exceeding***:				
						Fed. Bull Trout	Spring SS	Fall SS	CWAL daily max.	CWAL daily ave.
33	West Fork Crooked R.	WF Crooked R. 1.6 km Above Fork	6/1/99 - 11/1/99	Bull, Chinook, Rain/Stl, Cut	4,800	54	25	14	0	0
33	West Fork Crooked R.	WF Crooked R. 1.6 km Above Fork	7/11/00 - 9/29/00	Bull, Chinook, Rain/Stl, Cut	4,800	53	36	19	0	0
34	East Fork Crooked R.	EF Crooked R.-2.3 km Above Fork	6/1/99 - 11/3/99	Bull, Chinook, Cut	4,800	29	18	13	0	0
34	East Fork Crooked R.	EF Crooked R. 2.3 km Above Fork	7/11/00 - 9/29/00	Bull, Chinook, Cut	4,800	45	36	6	0	0
35	Relief Cr.	Relief Cr. 0.6 km Above Mouth	5/27/99 - 10/14/99	Bull, Chinook, Rain/Stl, Cut	4,200	92	46	18	0	0
35	Relief Cr.	Relief Cr. 0.6 km Above Mouth	7/11/00 - 9/30/00	Bull, Chinook, Rain/Stl, Cut	4,200	63	36	23	0	0
36	South Fork Clearwater R.	SF Clearwater Above Elk City Mill	6/23/00 - 11/7/00	Rain/Stl	3,800	NA	23	0	18	14
36	South Fork Clearwater R.	SF Clearwater Above Elk City Mill	7/12/01 - 10/9/01	Rain/Stl	1,800	NA	4	0	10	5
36	South Fork Clearwater R.	SF Clearwater Above Crooked R. Bridge	5/15/00 - 8/29/00	Rain/Stl	3,800	NA	44	0	13	18
37	Red R.	Red R. at Mouth Below Bridge	5/5/00 - 9/26/00	Bull, Chinook, Rain/Stl, Cut, Brook	3,800	118	75	38	13	16
38	Little Moose Cr.	10 m Upstream of USFS Stream Gage	5/25/00 - 9/12/00	Bull, Chinook, Rain/Stl, Cut, Brook	4,200	103	70	19	3	0
39	Moose Butte Cr.	Upper Moose Butte Cr.	8/2/01 - 10/31/01	Bull, Chinook, Cut, Brook	5,000	34	14	26	0	0

WB	Water Body Name	Location*	Dates Monitored	Salmonids Present**	Elev. (ft)	No. of Days Exceeding***:				
						Fed. Bull Trout	Spring SS	Fall SS	CWAL daily max.	CWAL daily ave.
41	South Fork Red R.	SF Red R. Below Road 222 Crossing	7/26/01 - 10/14/01	Bull, Cut, Rain/Stl, Brook	4,600	29	12	5	0	0
42	West Fork Red R.	WF Red R. 75m Above Mouth	5/25/00 - 9/12/00	Bull, Rain/Stl, Cut, Brook	5,200	55	29	14	0	0
42	West Fork Red R.	WF Red R. 75 m Above Mouth	5/25/00 - 9/12/00	Bull, Rain/Stl, Cut, Brook	5,200	69	46	8	0	0
42	West Fork Red R.	WF Red R. 20 m Above Mouth	5/27/99 - 10/31/99	Bull, Rain/Stl, Cut, Brook	5,200	55	32	15	0	0
42	West Fork Red R.	WF Red R. 20 m Above Mouth	5/25/00 - 9/12/00	Bull, Rain/Stl, Cut, Brook	5,200	70	47	9	0	0
43	WF of SF Red R.	WF of SF Red R. at Mouth	7/26/01 - 10/23/01	Bull, Rain/Stl, Cut	5,400	48	19	0	0	0
43	WF of SF Red R.	Upper WF of SF Red R.	7/17/01 - 10/15/01	Bull, Rain/Stl, Cut	5,800	55	18	0	0	0
45	Red R.	Red R. Above Shissler Cr.	7/18/00 - 9/29/00	Bull, Chinook, Rain/Stl, Cut, Brook	4,800	47	29	16	0	0
45	Red R.	Red R. Above Shissler Cr.	6/27/01 - 10/23/01	Bull, Chinook, Rain/Stl, Cut, Brook	4,800	76	45	24	0	0
45	Red R.	Red R. Above Trail Cr.	7/18/00 - 9/29/00	Bull, Chinook, Rain/Stl, Cut, Brook	4,600	65	29	30	0	0
45	Red R.	Red R. Above Trail Cr.	6/27/01 - 10/23/01	Bull, Chinook, Rain/Stl, Cut, Brook	4,600	90	50	41	0	0
45	Red R.	Red R. Above Ditch Cr.	7/18/00 - 9/29/00	Bull, Chinook, Rain/Stl, Cut, Brook	4,400	62	29	30	3	0

						No. of Days Exceeding***:				
WB	Water Body Name	Location*	Dates Monitored	Salmonids Present**	Elev. (ft)	Fed. Bull Trout	Spring SS	Fall SS	CWAL daily max.	CWAL daily ave.
45	Red R.	Red R. Above Ditch Cr.	6/27/01 - 10/23/01	Bull, Chinook, Rain/Stl, Cut, Brook	4,400	90	50	39	0	0
45	Red R.	Red R. Above Otterson Cr.	7/18/00 - 10/16/00	Bull, Chinook, Rain/Stl, Cut, Brook	4,800	56	29	23	0	0
45	Red R.	Red R. Above Otterson Cr.	6/27/01 - 10/31/01	Bull, Chinook, Rain/Stl, Cut, Brook	4,800	90	49	29	0	0
48	Otterson Cr.	Otterson Cr. at Mouth	7/18/00 - 10/16/00	Bull, Chinook, Cut, Brook	4,600	58	29	28	0	0
48	Otterson Cr.	Otterson Cr. at Mouth	6/28/01 - 10/31/01	Bull, Chinook, Cut, Brook	4,600	89	49	37	0	0
50	Siegel Cr.	Siegel Cr. at USFS Boundary	7/18/00 - 9/29/00	Bull, Chinook, Rain/Stl, Cut, Brook	4,200	65	29	32	18	0
52	American R.	American R. 30 ft Upstream of Mouth	5/15/00 - 09/26/00	Bull, Chinook, Rain/Stl, Cut, Brook	3,800	118	74	38	23	12
52	American R.	American R. at River Mile 9.1	5/15/00 - 09/26/00	Bull, Chinook, Rain/Stl, Cut, Brook	4,000	118	76	37	26	13
57	Little Elk Cr.	Little Elk Cr. at USFS Boundary	7/7/00-9/17/00	Bull, Chinook, Cut, Rain/Stl, Brook	4,200	61	40	23	0	0
57	Little Elk Cr.	Little Elk Cr. 50 m Above Mouth	7/19/00-9/17/00	Bull, Chinook, Cut, Brook, Rain/Stl	3,800	56	28	34	6	3
58	Big Elk Cr.	Big Elk Cr. At Mouth	7/19/00-10/18/00	Bull, Chinook, Rain/Stl, Cut, Brook	3,800	68	28	37	18	5
58	Big Elk Cr.	Big Elk Cr. at USFS Boundary	7/15/00-10/17/00	Bull, Chinook, Rain/Stl, Cut, Brook	4,400	54	32	22	0	0

WB	Water Body Name	Location*	Dates Monitored	Salmonids Present**	Elev. (ft)	No. of Days Exceeding***:				
						Fed. Bull Trout	Spring SS	Fall SS	CWAL daily max.	CWAL daily ave.
62	Newsome Cr.	Newsome Cr. at Mouth	6/25/99-10/16/99	Bull, Chinook, Rain/Stl, Cut	3,600	90	51	41	0	0
63	Bear Cr.	Bear Cr. at Mouth	6/24/00-10/18/00	Bull Chinook, Rain/Stl, Cut	3,800	78	53	26	0	0
63	Bear Cr.	Bear Cr. at Mouth	6/28/01-10/8/01	Bull Chinook, Rain/Stl, Cut	3,800	77	49	29	0	0
65	NF Beaver Cr.	NF Beaver Cr. at Mouth	7/8/00-10/22/00	Bull, Rain/Stl, Cut	4,400	62	39	0	0	0
65	NF Beaver Cr.	NF Beaver Cr. at Mouth	6/30/01-10/8/01	Bull, Rain/Stl, Cut	4,400	87	45	0	0	0
65	SF Beaver Cr.	SF Beaver Cr. At Mouth	6/29/00-10/18/00	Rain/Stl, Cut	4,400	58	39	0	0	0
65	SF Beaver Cr.	SF Beaver Cr. at Mouth	6/30/01-10/8/01	Rain/Stl, Cut	4,400	73	43	0	0	0
65	Beaver Cr.	Beaver Cr. at Mouth	6/29/00 - 10/18/00	Bull, Rain/Stl, Cut	4,400	79	48	0	0	0
65	Beaver Cr.	Beaver Cr. at Mouth	6/28/01-10/8/01	Bull, Rain/Stl, Cut	3,800	89	49	0	0	0
68	Newsome Cr.	Newsome Cr. Below Radcliff	7/9/00-10/16/00	Bull, Rain/Stl, Cut, Chinook	4,000	69	38	27	0	0
68	Newsome Cr.	Newsome Cr. Below Radcliff	7/25/01-10/17/01	Bull, Rain/Stl, Cut, Chinook	4,000	62	22	33	0	0
68	Newsome Cr.	Newsome Cr. Above Haysfork	7/9/00-10/24/00	Bull, Rain/Stl, Cut, Chinook	4,000	73	38	31	6	0
68	Newsome Cr.	Newsome Cr. Above Haysfork	7/27/01-11/6/01	Bull, Rain/Stl, Cut, Chinook	4,000	60	20	39	0	0
70	Baldy Cr.	Baldy Cr. 0.3 km Above Mouth	6/1/99-10/30/99	Bull, Chinook, Rain/Stl, Cut	4,000	84	47	18	0	0

WB	Water Body Name	Location*	Dates Monitored	Salmonids Present**	Elev. (ft)	No. of Days Exceeding***:				
						Fed. Bull Trout	Spring SS	Fall SS	CWAL daily max.	CWAL daily ave.
71	Pilot Cr.	Pilot Cr. 50 m Below Bridge By Mouth	6/25/99-10/10/99	Bull, Chinook, Rain/Stl, Cut	4,000	67	38	17	0	0
71	Pilot Cr.	Pilot Cr. 50 m Below Bridge By Mouth	7/9/00-9/29/00	Bull, Chinook, Rain/Stl, Cut	4,000	62	38	24	0	0
71	Pilot Cr.	Pilot Cr. Above Dredging	7/12/00-8/23/00	Bull, Chinook, Rain/Stl, Cut	4,000	37	35	8	0	0
71	Pilot Cr.	Pilot Cr. Above Dredging	6/29/01-10/2/01	Bull, Chinook, Rain/Stl, Cut	4,000	84	48	31	0	0
72	Sawmill Cr.	Sawmill Cr. at Mouth	6/29/00-10/18/00	Bull, Chinook, Cut, Rain/Stl	4,000	72	46	25	0	0
72	Sawmill Cr.	Sawmill Cr. at Mouth	6/29/01-10/02/01	Bull, Rain/Stl, Chinook, Cut	4,000	78	48	28	0	0
73	Sing Lee Cr.	Sing Lee Cr. at Mouth	7/8/00-10/18/00	Chinook, Cut, Rain/Stl	3,800	NA	39	25	0	0
73	Sing Lee Cr.	Sing Lee Cr. at Mouth	6/28/01-10/8/01	Chinook, Cut, Rain/Stl	3,800	NA	49	28	0	0
75	Leggett Cr.	Leggett Cr. at Mouth	8/2/99-10/10/99	Chinook, Rain/Stl, Cut	3,600	NA	14	19	0	0
75	Leggett Cr.	Leggett Cr. at Mouth	6/24/00-10/24/00	Chinook, Rain/Stl, Cut	3,600	NA	53	29	0	0
77	Silver Cr.	Silver Cr. at Mouth	7/14/99-10/7/99	Bull, Rain/Stl, Brook	2,800	69	2	35	0	0
77	Silver Cr.	Silver Cr. at Mouth	6/17/00-10/12/00	Bull, Rain/Stl, Brook	2,800	89	29	29	0	0
77	Silver Cr.	Silver Cr. at Mouth	6/20/01-10/27/01	Bull, Rain/Stl, Brook	2,800	97	26	41	0	0

						No. of Days Exceeding***:				
WB	Water Body Name	Location*	Dates Monitored	Salmonids Present**	Elev. (ft)	Fed. Bull Trout	Spring SS	Fall SS	CWAL daily max.	CWAL daily ave.
78	Peasley Cr.	Peasley Cr. at Mouth	7/17/99-10/7/99	Rain/Stl	2,600	NA	0	0	0	0
78	Peasley Cr.	Peasley Cr. at Mouth	6/30/00-10/19/00	Rain/Stl	2,600	NA	16	0	0	0
78	Peasley Cr.	Peasley Cr. at Mouth	6/17/00-10/12/00	Rain/Stl	2,600	NA	29	0	0	0
78	Peasley Cr.	Peasley Cr. at Mouth	6/19/01-10/27/01	Rain/Stl	2,600	NA	57	0	0	0
79	Cougar Cr.	Cougar Cr. at Mouth	7/14/99-10/7/99	Cut, Rain/Stl	2,400	NA	33	0	0	0
79	Cougar Cr.	Cougar Cr. at Mouth	6/17/00-10/12/00	Cut, Rain/Stl	2,400	NA	60	0	0	0
79	Cougar Cr.	Cougar Cr. at Mouth	6/19/01-10/27/01	Cut, Rain/Stl	2,400	NA	58	0	0	0
80	Meadow Cr.	Meadow Cr. at Mouth	6/15/00-10/12/00	Bull, Chinook, Rain/Stl, Cut, Brook	2,200	99	62	40	4	4
80	Meadow Cr.	Meadow Cr. at Mouth	6/19/01-10/27/01	Bull, Chinook, Rain/Stl, Cut, Brook	2,200	98	58	46	1	3
80	Meadow Cr.	Meadow Cr. at Campground	7/14/99-10/6/99	Bull, Chinook, Rain/Stl, Cut, Brook	2,200	72	33	42	1	2
80	Meadow Cr.	Lower Meadow Cr.	5/15/99-10/15/99	Bull, Chinook, Rain/Stl, Cut, Brook	3,000	112	66	41	46	8
80	Meadow Cr.	Lower Meadow Cr.	5/15/00-9/26/00	Bull, Chinook, Rain/Stl, Cut, Brook	3,200	118	72	38	44	20
80	Meadow Cr.	Middle Meadow Cr.	5/15/99-10/14/99	Bull, Chinook, Rain/Stl, Cut, Brook	3,200	110	65	41	19	0
80	Meadow Cr.	Middle Meadow Cr.	5/15/00-9/26/00	Bull, Chinook, Rain/Stl, Cut, Brook	3,200	118	72	35	28	3
80	Meadow Cr.	Upper Meadow Cr.	5/15/99-10/20/99	Bull, Chinook,	3,600	104	57	29	0	0

						No. of Days Exceeding***:				
WB	Water Body Name	Location*	Dates Monitored	Salmonids Present**	Elev. (ft)	Fed. Bull Trout	Spring SS	Fall SS	CWAL daily max.	CWAL daily ave.
				Rain/Stl, Cut, Brook						
80	NF Meadow Cr.	NF Meadow Cr.	5/15/99-10/21/99	Bull, Chinook, Rain/Stl, Cut, Brook	3,200	109	66	36	0	0
80	NF Meadow Cr.	NF Meadow Cr.	5/15/00-9/26/00	Bull, Chinook, Rain/Stl, Cut, Brook	3,200	116	72	31	0	0
80	Meadow Cr.	Meadow Cr. at McComas Meadows	5/15/00-9/26/00	Bull, Chinook, Rain/Stl, Cut, Brook	3,200	116	72	34	0	0
81	Sally Ann Cr.	Sally Ann Cr. at Mouth	5/5/01-7/17/01	Bull, Cut	1,400	47	45	0	8	5
81	Sally Ann Cr.	Wall Cr. at Mouth	7/3/01-10/22/01	Cut	1,600	NA	44	0	0	0

* USGS = U.S. Geological Survey, WWTP = wastewater treatment plant, USFS = U.S. Forest Service

** Bull = bull trout, Chinook = chinook salmon, Rain/Stl = rainbow/steelhead trout, Cut = cutthroat trout, Brook = brook trout

*** NA = The bull trout standard is not applicable. Water body has not been designated as protected (Appendix B). SS = salmonid spawning, CWAL = cold water aquatic life